

UNDERGROUND OUTLET

Materials

The materials shall meet the requirements of the appropriate ASTM and be consistent with the backfill loading, velocities, and strengths required. The materials will be field inspected for any deficiencies or damage.

Trench Excavation and Pipe Placement

The trench excavation shall be to a uniform grade and the pipe placement will be such that there is no-reverse grade in the pipe. When the trench is for corrugated plastic it shall be excavated by either method 1 or 2 as is shown on page S-620-3. The excavation for rigid conduit can be by Method 1, 2, or 3. Depth of excavation shall be sufficient to provide at least 30" of cover over the installed conduit. The trench shall be at least 4" wider than the installed pipe. The riser and conduit under the embankment will be excavated as shown on page S-620-5 and S-620-6.

Backfill

The trench will be initially backfilled with finely graded backfill material to 6" above the conduit. This operation is called blinding. Care will be taken to be sure the blinding material completely surrounds the conduit without displacing the conduit. Under certain conditions it may be necessary to compact the initial backfill to make sure it is firmly in place. Under an embankment the trench will be hand compacted or water packed to 12 inches above the conduit as shown on page S-620-5 and S-620-6.

Backfill under the embankment shall have a moisture content of no less than 4% below optimum. The remaining backfill under the embankment to original ground will be completed as is shown on page S-620-4 and S-620-5. In the case of corrugated plastic pipe, outside of the embankment will either be compacted carefully by hand compaction or water packing to 6" over the pipe. The remainder of the trench may be equipment-compacted to the ground surface.

Water packing is defined as adding water to diked reaches of the trench in such quantity as to thoroughly saturate the backfill without excessive pooling of water. After saturation of the fill, the backfill shall be allowed to dry until firm enough to walk on before any equipment traffic is allowed over the backfill.

Inlet

The inlet will be installed Installation" details. The firm to the finish grade high slump (up to 6 inches) of hand-directed compaction according to the appropriate "Typical Riser backfill around the inlet will be compacted line by hand-directed tamping equipment. A

sand-gravel concrete mix may be used in lieu around the base of the offset riser to the main underground conduit line to approximately 1 inch over the conduit, as shown in the typical riser installation (page S-620-5).

A guard post is required for the corrugated riser and recommended for other material. A cap, -plate, or trash guard shall be installed over the top of the inlet riser.

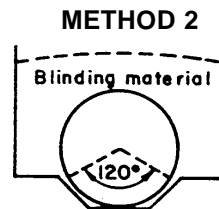
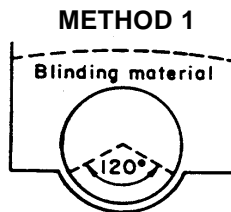
Outlet

The outlet shall be of sufficiently rigid material to withstand a minimal cantilever and livestock traffic. A pipe support may be required, depending upon outlet site conditions. A hinge-type gate will be installed for a rodent guard.

Installation Methods

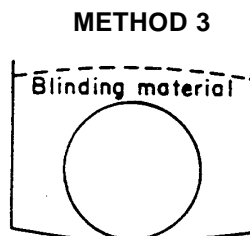
Methods 1 and 2

The bottom of the excavated trench shall be shaped to conform approximately to the shape of the conduit, and the conduit shall be laid in this groove. The groove may be semicircular or trapezoidal-shaped and shall be of such dimensions that the bottom 120 degrees of the conduit is supported by undisturbed soil. Blinding and backfilling operations can be in the conventional manner, using soil from the sides of the trench and excavated material.

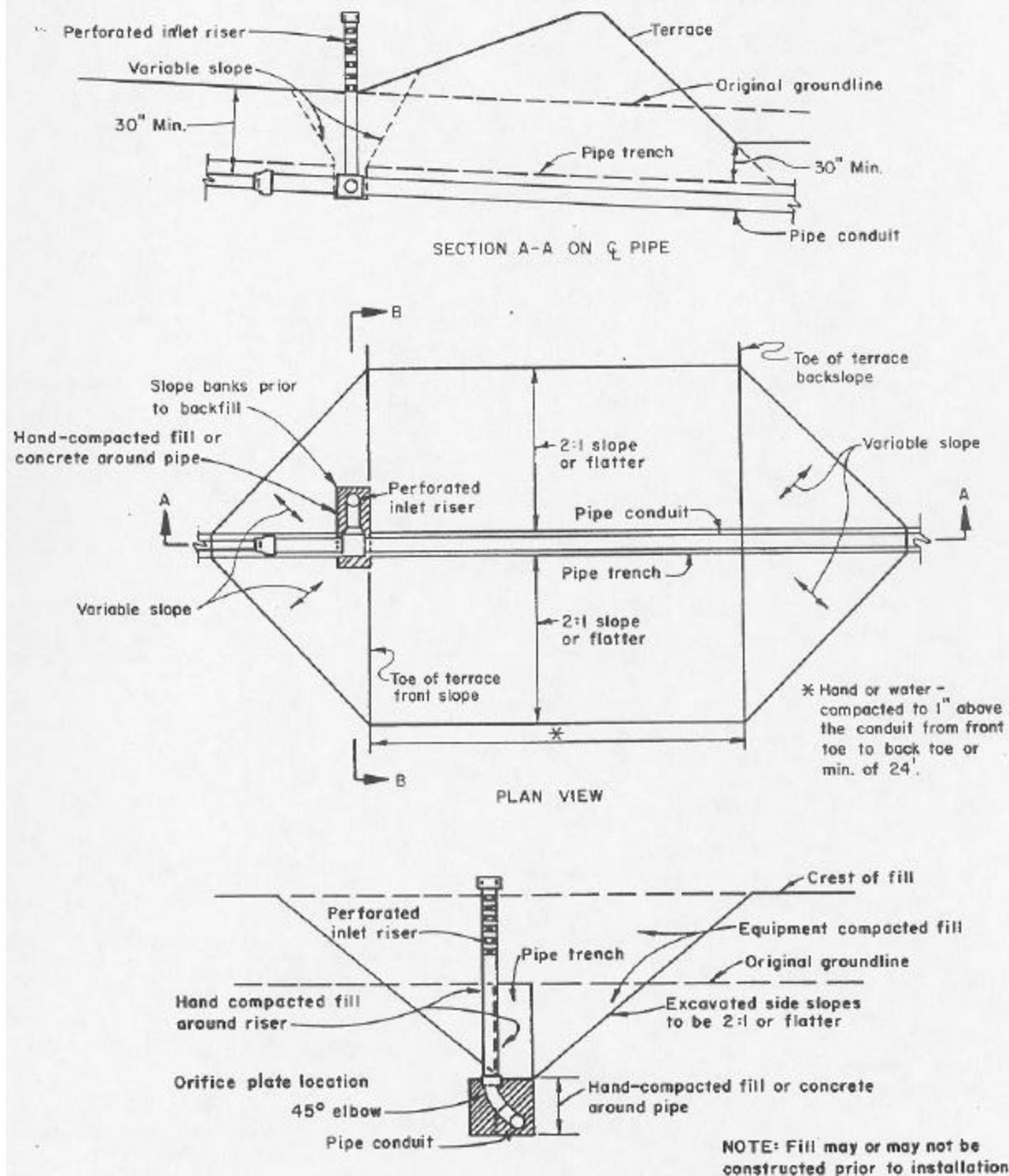


Method 3

Where rigid conduit is to be used, it can be placed in a conventional trench and blinded and backfilled in the conventional manner, using soil from the sides of the trench and excavated material.



TYPICAL RISER INSTALLATION WITH 45° ELBOW



TYPICAL RISER INSTALLATION WITH OFFSET

